Serial No. 09/765,540
Filed: January 19, 2001

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A titration method for determining the concentration of a base developer solution to within ±0.02 mN, said method comprising:

performing steps (a) and (b) in any order:

(a) weighing to ±0.001%, an amount of a solution of aqueous base developer of known approximate normality;

(b) weighing to ±0.001%, an amount of an acid titrant sufficient to neutralize at least 90% of the base developer in the solution of step (a);

thereafter performing steps (c)-(e) in the following order:

(c) contacting the aqueous base developer solution with the acid titrant to neutralize at least 90% of the base developer in the solution, and leaving from about 1% to about 10% of the original aqueous base developer as residual non-neutralized base developer in the solution;

(d) titrating the residual non-neutralized base developer in the solution with the acid titrant to the end point in an inert atmosphere;

wherein the temperature of the acid titrant is maintained at a temperature of about 20-30°C ±0.2°C, the normality of the acid titrant is known to within ±0.01 mN; and wherein the vessel dispensing the titrant contains sufficient titrant to titrate the residual non-neutralized base developer in the solution to the end point, without having to be refilled, and wherein the volume of titrant dispensed for the titration is at least 70% of the vessel volume; and

(e) calculating the normality of the aqueous base developer solution to within ±0.02 mN;

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wherein the densities of the aqueous base developer solution and the acid titrant are known to ± 0.00001 g/ml, and steps (a)-(c) are carried out under conditions sufficient to minimize base developer and titrant evaporation, and uptake of carbon dioxide from the atmosphere.

2. (original) The method of claim 1, wherein step (a) is performed after step (b).

3. (original) The method of claim 1, wherein step (b) is performed after step (a).

4. (original) The method of claim 1, wherein in step (a), the aqueous base developer is a member selected from the group consisting of N-tetramethylammonium hydroxide, N-tetraethylammonium hydroxide, N-tetrabutylammonium hydroxide, sodium hydroxide, potassium hydroxide and sodium silicate.

5. (original) The method of claim 1, wherein the conditions sufficient to minimize uptake of carbon dioxide from the atmosphere comprise inert atmosphere.

6. (original) The method of claim 3, wherein inert atmosphere is a nitrogen or argon atmosphere.

7. (original) The method of claim 1, wherein carrying out steps (a)-(d) under conditions sufficient to minimize base developer and titrant evaporation comprise weighing the aqueous base solution in step (a) and the acid titrant in step (b) using closed containers.

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8. (original) The method of claim 1, wherein in step (a), the known approximate normality of the aqueous base developer solution is within about 90 to 99% of the normality of the acid titrant.

9. (original) The method of claim 1, wherein the acid titrant is a mineral acid.

10. (original) The method of claim 7, wherein the mineral acid is a member selected from the group consisting of hydrochloric acid, sulfuric acid and nitric acid.

11. (original) The method of claim 1, wherein in step (c), the vessel is a buret.

12. (original) The method of claim 11, wherein the buret has a volume capacity of about 10 ml to about 100 ml.

13. (original) The method of claim 11, wherein the buret comprises a buret having a plunger.

14. (original) The method of claim 13, wherein the buret having a plunger has a plunger stroke length that is about 75% of buret length.

15. (original) The method of claim 1, wherein in step (c), the titration is carried out by a computer controlled, automatic titrator.

16. (original) The method of claim 1, wherein in step (c), the approximate normality of the aqueous base developer solution ranges from about 0.1 N to about 1.0 N.

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17. (original) The method of claim 1, wherein in step (c), the acid titrant is dispensed in minimum aliquot volumes of about 1 μl to about 20 μl.

18. (original) The method of claim 1, wherein in step (c), the temperature of the titrant is maintained at 25°C ±0.2°C.

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